REMARKS

Further consideration of the existing claims of this application is requested for the following reasons.

Claims 1-10, 23 and 24 have been rejected under 35 USC § 103 as being unpatentable over the Chen patent. This rejection is inappropriate for the following reasons.

Independent claim 1 is directed to a "conveyor" screw having flights that extend from "an inlet end part of the conveyor screw to an outlet end part of the conveyor screw. Inherently, such recitations require screw flights that are able to move material from one end of the flights to the other. However, Chen discloses an "agitator" screw, not a conveyor screw, and its flights are neither intended to nor capable of functioning as a conveyor, a fact that should be abundently apparent from the fact that "the inner spiral vane 20 is left-handed while the outer spiral vane 23 is right-handed" so that the "mixture will be moved to and from along the axle 11 thereby stirring the mixture thoroughly" (column 3, 16-19). That is, because one vane acts to move the mixture to the left while the other acts to move it to the right the result is that the mixture is merely agitated and mixed, but cannot be conveyed from an inlet end to an outlet end. Moreover, claim 1 requires that the two flights extend in parallel which is clearly not the case since one of Chen's flights is left-handed and the other is right-handed and the drawings show the anti-parallel nature thereof with the inner flight going radially outward when the outer flight is going radially inwarde and *vice verse.*

Furthermore, claim 1 requires that the radially shorter of the two flights be "in a range of 0.85 to 0.98 times the radius of the radially longer of the screw flights." The Examiner has acknowledged that Chen does not disclose such a relationship between his two screw flights, and has improper ignored this limitation on the based that he considers the relative distances of the two screws to be "matters of obvious design choice to one of ordinary skill" without any explanation of how he reached such a conclusion. Applicant has disclosed an advantage to this relationship in the next-to-last paragraph of page 5 where it is stated that:

> In order to lower the necessary inlet pressure for a conveyance apparatus with the said conveyor screw, **it is an advantage that** said at least two screw flights extend over an inlet end part of the conveyor screw so that ***the radially shorter screw flights, e.g. 0,85-0,98 times the radius of the longer screw flight,*** **increases the conveyance near the inlet end and thereby increases the inlet suction of the conveyance apparatus.** (Emphasis Added.)

Since Chen has no inlet and his screw performs no conveyance, what could make it obvious to one of ordinary skill to give his screw characteristics that are designed to produce increases in inlet suction? MPEP § 2144.05 is specifically directed to the obviousness of ranges, and in this section it is stated with respect to the optimization of ranges that:

> II. OPTIMIZATION OF RANGES
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> * * * *
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> B. Only Result-Effective Variables Can Be Optimized
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> A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result- effective variable.).

Here, there is no indication that the radial height of the inner flight relative to the outer flight is a "result-effective variable" for any reason, let alone for achieving the benefit sought by the present applicant. In fact, given Chen's agitating function, there is no reason to even believe that the screw would be operational for his intended agitating function if the inner vane was between 85 and 95% of the height of the outer flight since only be a minimal gap would exist between the oppositely directed flights thereby inhibiting the counter-flow mixing effect sought by Chen. Accordingly, the Examiner's assertions that the recited radial height range lacks patentable significance and that using such ranges for Chen's screw would be obvious are contrary to Office policy and the law as well as contrary to the existing facts.

In view of the foregoing, reconsideration and withdrawal of the outstanding rejection under § 103 based on the Chen patent are in order and are hereby requested.

Claims 11, 12 & 14-22 been rejected under 35 USC § 103 as being unpatentable over Hoffmann et al. Patent (hereafter, Hoffmann) when viewed in combination with the Chen patent. However, this combination of references is both illogical and incapable of resulting in the claimed invention.

First, since all of these claims require a conveyor screw (or the use thereof) which has all of the characteristics of the conveyor screw of claim 1, merely using the Chen screw in the

Hoffmann apparatus and process would result in an apparatus and process that is distinguishable from that claimed in this application for all of the reasons indicated above. However, it would be illogical, and thus, unobvious, to replace the conveying screw of Hoffmann with the agitator screw of Chen since it would clearly render Hoffmann's method and apparatus inoperative. That is Chen's use of left and right hand flights on a single shaft to move a mixture to-and-fro for mixing purposes, would prevent orderly conveyance of the ice cream mixture of Hoffmann, likely resulting in freeze-up and break-down of the apparatus. The Examiner has failed to explain why anyone of any skill in the art would have any reason to use an agitator screw as disclosed by Chen in place of the conveyor screw Hoffmann, and applicant submits that no valid reason for doing so exists, either derivable from the applied references or from anything known to those of ordinary skill in the art.

Accordingly, it is submitted that the § 103 rejection based upon the combined teachings of Hoffmann and Chen is unsustainable and should be withdrawn, such action being hereby requested.

Therefore, on the basis of the foregoing, in the absence of new and more relevant prior art being discovered, this application should now be in condition for allowance and action to that effect is requested. However, while it is believed that this application should now be in condition for allowance, in the event that any issues should remain, or any new issues arise, after consideration of this response which could be addressed through discussions with the undersigned, then the Examiner is requested to contact the undersigned by telephone for the purpose of resolving any such issue and thereby facilitating prompt approval of this application.

Respectfully submitted,

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